

Data Sheet

PLUS+1[®] Controllers

MC088-121 Controller



Mobile Machine Management

Danfoss PLUS+1[®] controllers are elements of the flexible, powerful, expandable, and affordable family of mobile machine management products. These devices are general-purpose controllers that are equally suited for use as members of a distributed machine control system, with intelligence in every node, or as stand-alone controllers.

Product Highlights

The MC088-121 controller employs a 32 bit Cortex-M3, providing the controller with extremely fast single cycle processing speed and 1024K internal flash.

Features

- User-programmable with PLUS+1[®] GUIDE (Graphical User Integrated Development Environment)
- 88 pins:
 - 1 DEUTSCH DRC26-50 connector
 - 1 DEUTSCH DRC26-38 connector
- 32 bit fixed-point Cortex-M3 running at 120 MHz
- 12 bit analog-to-digital converter
- 1 independent ECU power supply, 9 to 36 Vdc
- 2 CAN 2.0B ports, the fixed range analog (AIN/CAN shield) pin may be configured as a shield pin
- Regulated 5 Vdc power supply for external sensors rated at 100 mA
- 2 LEDs under application software control
- Regulated 8 Vdc power supply for external sensors rated at 250 mA
- CE compliant

Comprehensive technical literature is online at www.danfoss.com



34 Inputs

- 8 digital/frequency (DIN/Freqin) that are defined as either:
 - *Digital*: Configured as pulled down (0 Vdc) only Frequency (timing): 1 Hz to 10 kHz
- 3 digital/analog/rheostat (DIN/AIN/Rheo) that are defined as either:
 - *Digital*: Configured as pulled up (5 Vdc) only
 - *Analog*: With a fixed range of 0 to 5 Vdc
 - *Rheostat*: Resistance: 2 to 10,000 ohms
- 2 digital/analog/frequency (DIN/AIN/Freqin) that are user defined as either:
 - *Digital*: Pulled down (0 Vdc)
 - *Analog*: With a fixed range of 0 to 5.25 Vdc
 - *Frequency (timing)*: 1 Hz to 10 kHz
- 13 digital (DIN) is configured as pull up (5 Vdc) only
- 3 digital (DIN Batt) is configured as pull down (0 Vdc) only
- 5 digital/analog (DIN/AIN) that are defined as either:

- *Digital*: Configured as pull down (0 Vdc) only
- *Analog*: With a fixed range of 0 to 5 Vdc

31 Outputs

- 12 digital (DOUT) .3 A configured as source only
- 1 digital (DOUT) .5 A configured as source only
- 2 digital (DOUT-RTN) 2 A configured as sink only.
- 16 universal (PWM/DOUT) configured to be either:
 - *Digital*: 2 A source or sink
 - *PWM*: (2 A, 33 to 4000 Hz) configurable as open or closed loop with current control
 - *Analog voltage*: Open loop PWM at 4000 Hz

Specifications

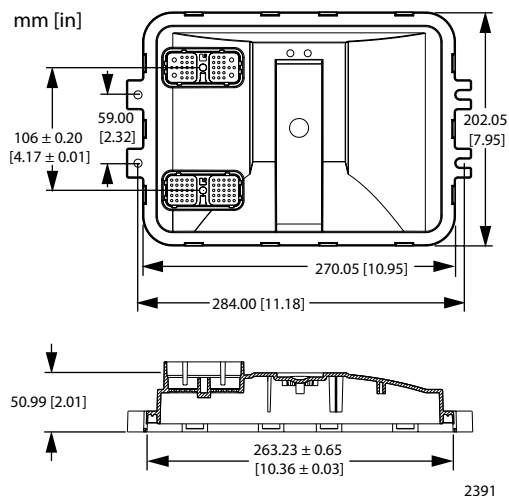
Product parameters

Supply voltage	9 to 36 V _{DC}
Operating temperature (ambient)	– 40°C to 70°C [– 40°F to 158°F]
Storage temperature	– 40°C to 85°C [–40 °F to 185°F]
Programming temperature	0°C to 70°C [32°F to 158°F]
IP rating (with mating connector attached)	IP 67
EMI/RFI rating	100 V/M
Weight	964 kg [2.125 lb]
Maximum current, sourcing	100 A (with all power supply and pins connected)
Maximum current, sinking	24 A (with all ground pins connected)

Dimensions and pin assignments

Mounting dimensions and pin assignments

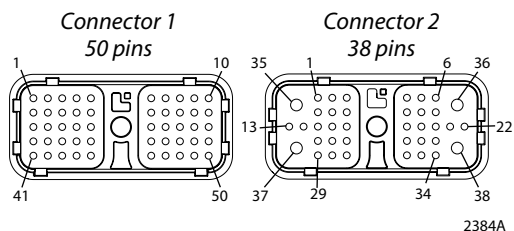
Dimensions in mm [in]



! Caution

This device is not field serviceable. Opening the device housing will void the warranty.

Pin connector



Connector 1

Pin	Controller function	Pin	Controller function
C1-P1	CPU power ground -	C1-P26	DIN
C1-P2	CPU power supply +	C1-P27	DIN
C1-P3	CAN0+	C1-P28	DIN
C1-P4	CAN0-	C1-P29	DIN
C1-P5	AIN/CAN0 shield	C1-P30	DIN
C1-P6	8 Vdc sensor power +	C1-P31	DOUT (3 A)
C1-P7	Sensor power ground -	C1-P32	DOUT (3 A)
C1-P8	5 Vdc sensor power +	C1-P33	DIN
C1-P9	Sensor power ground -	C1-P34	DIN
C1-P10	PWMOUT/DOUT (2 A)	C1-P35	DIN/AIN
C1-P11	DOUT (.3 A)	C1-P36	DIN/AIN
C1-P12	DOUT (.3 A)	C1-P37	DIN/AIN
C1-P13	PWMOUT/DOUT (2A)	C1-P38	DIN/AIN
C1-P14	PWMOUT/DOUT (2A)	C1-P39	DIN/AIN
C1-P15	DIN	C1-P40	DIN (BATT)
C1-P16	DIN	C1-P41	DOUT (2 A)
C1-P17	DIN	C1-P42	DOUT (2 A)
C1-P18	DIN	C1-P43	DOUT (2 A)
C1-P19	DIN	C1-P44	DOUT (2 A)
C1-P20	PWMOUT/DOUT (2 A)	C1-P45	DIN (BATT)
C1-P21	DOUT (.3A)	C1-P46	DIN (BATT)
C1-P22	DOUT (.3A)	C1-P47	DIN/FreqIN
C1-P23	PWMOUT/DOUT (2 A)	C1-P48	DIN/FreqIN
C1-P24	PWMOUT/DOUT (2 A)	C1-P49	PWMOUT/DOUT (2 A)
C1-P25	DIN	C1-P50	PWMOUT/DOUT (2 A)

Connector 2

Pin	Controller function	Pin	Controller function
C2-P1	DOUT (2 A)	C2-P20	DIN/FreqIN
C2-P2	DOUT (2 A)	C2-P21	PWMOUT/DOUT (2 A)
C2-P3	DOUT (.5 A)	C2-P22	PWMOUT/DOUT (2 A)
C2-P4	DOUT-RTN (2 A)	C2-P23	DOUT (.3 A)
C2-P5	PWMOUT/DOUT (2 A)	C2-P24	PWMOUT/DOUT (2 A)
C2-P6	PWMOUT/DOUT (2 A)	C2-P25	PWMOUT/DOUT (2 A)
C2-P7	DOUT (.3 A)	C2-P26	DIN/FreqIN
C2-P8	DOUT (2 A)	C2-P27	DIN/FreqIN
C2-P9	DIN/AIN/Rheo	C2-P28	DIN/FreqIN
C2-P10	DOUT-RTN (2 A)	C2-P29	DOUT (.3 A)
C2-P11	DIN/AIN/Rheo	C2-P30	PWMOUT/DOUT (2A)
C2-P12	DIN/AIN/Rheo	C2-P31	PWMOUT/DOUT (2A)
C2-P13	DOUT (.3 A)	C2-P32	CAN1 +
C2-P14	DOUT (.3 A)	C2-P33	CAN1 -
C2-P15	DOUT (.3 A)	C2-P34	AIN/CAN1 shield
C2-P16	DIN/AIN/FreqIN	C2-P35	Power supply -
C2-P17	DIN/AIN/FreqIN	C2-P36	Power supply + (29 A)
C2-P18	DIN/FreqIN	C2-P37	Power supply -
C2-P19	DIN/FreqIN	C2-P38	Power supply + (29 A)



Ordering information

Product part number

MC088-121	11279844
------------------	----------

Related products part numbers

CG150 CAN/USB Gateway	10104136	
DEUTSCH mating connector bag assembly	11071844 (16 to 20 AWG)	10105649 (20 to 24 AWG)
PLUS+1[®] GUIDE single user license	10101000	

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequent changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.